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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/781,677	KITAMURA ET AL.
	Examiner	Art Unit
	Dennis Myint	2162

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 03 August 2007.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1,2 and 22-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-2 and 22-25 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) Notice of Informal Patent Application
- 6) Other: _____

DETAILED ACTION

1. This communication is responsive to Applicant's Amendment, filed on August 3, 2007.
2. In the Amendment filed on August 3, 2007, claims 1, 2, 22, 23, 24 and 25 were amended. Claims 1-2 and 22-25 are currently pending in this application. Claims 1, 2, and 22 are independent claims. **This office action is made final.**
3. In light of the arguments made to claims 22 and 25, rejection of said claims under 35 U.S.C. § 101 is hereby withdrawn.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required. Claim 22 in lines 1 recites "A computer-readable medium" and claim 25 in lines 1-2 recites "A computer-readable medium". However, the specification recites "a recording medium" (Specification of the instant application, paragraph 0039) and fails to provide proper antecedent for said claim limitation.

Response to Arguments

4. The applicant's arguments filed on August 3, 2007 have been fully considered but are not persuasive.

Applicant argued that *the combination including Marshall takes the old database offline and puts the new database online* (Applicant's argument, page 9 second

paragraph) and that *In accordance with the above, the Applicants respectfully submit that any motivated combination of Maurer, Marshall, and Yanai that relies on Marshall for the reasons set forth in the Office Action, nevertheless fails to render obvious the invention as set forth in claim 1* (Applicant's argument, page 9 third paragraph).

Examiner respectfully disagrees all of the allegations as argued. Examiner, in his previous office action, gave detail explanation of claimed limitation and pointed out exact locations in the cited prior art. Examiner is entitled to give claim limitations their broadest reasonable interpretation in light of the specification. See MPEP 2111 [R-1] Interpretation of Claims-Broadest Reasonable Interpretation.

During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. *In re Prater*, 162 USPQ 541,550-51 (CCPA 1969).

With respect to Applicant's argument that *the combination including Marshall takes the old database offline and puts the new database online* (Applicant's argument, page 9 second paragraph), In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., *taking databases offline and online*) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

With respect to Applicant's argument that *In accordance with the above, the Applicants respectfully submit that any motivated combination of Maurer, Marshall, and Yanai that relies on Marshall for the reasons set forth in the Office Action, nevertheless fails to render obvious the invention as set forth in claim 1* (Applicant's argument, page 9 third paragraph), it is pointed out that, as discussed in prior and current office actions, the combination of Maurer in view of Marshall and further in view of Yanai teaches all the limitations of claim 1 as follows.

As per claim 1, Maurer is directed to a data processing method and teaches the limitations:

"generating a second database as a duplicate of a first database allowing access from a program and after completion of the generation, switching a program access allowance from the first database to the second database" (Maurer, Figure 3: BCV and STD (e.g. DB Files); Paragraph 0060, i.e., such as database transaction processing; Paragraph 0112, i.e., a data storage system includes a storage array having logical volumes or units that can be accessed by one or more clients via a switch and In the case where the first logical unit is no longer accessible, such as due to disk failure, the storage array can provide access to the copy of the first logical unit by the client by swapping the logical unit accessed by the host),

"after switching the program access allowance, storing a history of a processing of the program to the second database as a processing history" (Maurer, Paragraph 0106, i.e., ... then the information related to the data may also be backed up..... and archives/redo logs), and

"updating the first database based on the processing history" (Maurer, Paragraph 0107-0109, i.e., *redo log files, and Control files contain information in the Oracle database, including information that describes the instance where the data files and log files reside and This is where information that will be used in a restore operation is kept.*) and

"switching the program access allowance from the second database to the first database" (Maurer, Paragraph 0112, i.e. *swapping the logical unit* and Paragraph 0055, i.e. *Mirrors can be synchronized in either direction* (i.e., from the BCV to the standard or *visa versa*).

As pointed in the prior office action (Final Office Action of 08/22/2006), when program access (control) is switched from the first database, any operation could be performed on the first database, while program access (control) is at the second database, such as reorganization of the first database or, as Maurer teaches, the storage of the first database might have been down.

The system and method of Maurer is not just a general synchronization system and method. Rather, Maurer teaches swapping logical units of a storage system wherein a first volume (first database) can be mirrored to a second volume (second database) and program/application access is switched to said second volume (second database) so that said second volume (second database) acts in place of the first volume (first database), accepting updates (Maurer, Paragraph 0060, i.e., *such as database transaction processing*; Paragraph 0112, i.e., *a data storage system includes a storage array having logical volumes or units that can be accessed by one or more clients via a switch and In the case where the first logical unit is no longer accessible,*

such as due to disk failure, the storage array can provide access to the copy of the first logical unit by the client by swapping the logical unit accessed by the host)). As necessary, the method and system of Maurer could switch program/application back to the first volume (Maurer, Paragraph 0112, i.e. swapping the logical unit and Paragraph 0055, i.e. Mirrors can be synchronized in either direction (i.e., from the BCV to the standard or visa versa)). The relevant feature of the Maurer patent to the instant application is the feature of switching program access between databases.

Maurer does not explicitly teach the limitations: "executing reorganization of the first database in parallel with the storing, the processing history being stored during the execution of the reorganization", during the input/output access ", and "upon completion of the updating of the first database according to the processing history stored (based on the processing history) during the reorganization" .

On the other hand, Marshall teaches the limitations: "executing reorganization of the first database (in parallel with the storing), the processing history being stored during the execution of the reorganization", " and "upon completion of the updating of the first database according to the processing history stored" (Marshall, Paragraph 0038, i.e., *According to the present disclosure, all updates to the database that occur during reorganization of database can be captured and stored into data spaces for later replay to the new database* and Paragraph 0011, i.e., *online reorganization of an existing database that occurs while read and update activity of the existing database continues may include unloading the existing database, reloading the existing database to a shadow database, building shadow database indexes, capturing updates for the existing database, taking the existing database offline, finalizing the shadow database*

with the any remaining updates when the existing database is taken offline, and placing the finalized shadow database online) .

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the method of Maurer for switching program access back and forth between database volumes with the method of Marshall for storing updates while databases are being reorganized for updating the reorganized database after the process of reorganization is finished so that the combined method would switch program access from a first database to a second database while the first database is being recognized, save updates which occur during the reorganizing of the first data for updating the first database when the reorganization process is finished, and execute reorganization of the first database in parallel with the storing. One would have been motivated to do so in order to *reduce this outage or downtime* (Marshall, Paragraph 0011).

Maurer in view of Marshall does not explicitly teach the limitation: ““(allowing a predetermined input/output access to the first database) in parallel and concurrently”.

On the other hand, Yanai teaches the limitation:

“(allowing a predetermined input/output access to the first database) in parallel and concurrently” (Yanai, Figure 14 and Figure 17; Column 6 Line 59-61, i.e., *migrating a volume concurrent with host access to the volume* and Abstract of Yanai specification). Yanai teaches a method and system for remote data mirroring, wherein, in an active mode migration mode, host processing of a primary volume (the program processing to the first or second database) is concurrent with migration to a secondary

volume (the predetermined processing to the first database (Column 6 Line 59-61, and "Abstract" of Yanai et al. specification).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the method of Maurer for switching program access back and forth between database volumes with the method of Marshall for storing updates while databases are being reorganized for updating the reorganized database after the process of reorganization is finished and with the method of Yanai, which teaches allowing program access to a database while a restore/mirror/update is being performed on a different database, based on the restore log/history on the database which currently allows program access, so that the combined method would switch program access from a first database to a second database while the first database is being recognized, save updates which occur during the reorganizing of the first data for updating the first database when the reorganization process is finished, and execute reorganization of the first database in parallel with the storing. One would have been motivated to do so in order provide a *data processing system, which automatically and asynchronously, with respect to a first host system, generates and maintains a back-up or "mirrored" copy of a primary storage device....* (Yanai, Column 2 Line 19-27).

In view of the above, the examiner contends that all limitations as recited in the claims have been addressed in this Action. For the above reasons, Examiner believed that rejection of the last Office action was proper.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claim 1, 2 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maurer III et al., (hereinafter "Maurer") (U.S. Patent Application Publication No. 2003/0065780) in view of Marshall et al., (hereinafter "Marshall") (U.S. Patent Application Publication Number 2003/0135478) and further in view of Yanai et al., (hereinafter "Yanai") (U.S. Patent Number 5742792).

As per claim 1, Maurer is directed to a data processing method and teaches the limitations:

"generating a second database as a duplicate of a first database allowing access from a program and after completion of the generation, switching a program access allowance from the first database to the second database" (Maurer, Figure 3: BCV and STD (e.g. DB Files); Paragraph 0060, i.e., *such as database transaction processing*; Paragraph 0112, i.e., *a data storage system includes a storage array having logical volumes or units that can be accessed by one or more clients via a switch and In the case where the first logical unit is no longer accessible, such as due to disk failure, the storage array can provide access to the copy of the first logical unit by the client by swapping the logical unit accessed by the host*),

"after switching the program access allowance, storing a history of a processing of the program to the second database as a processing history" (Maurer, Paragraph 0106, i.e., *... then the information related to the data may also be backed up..... and archives/redo logs*), and

"updating the first database based on the processing history" (Maurer, Paragraph 0107-0109, i.e., *redo log files, and Control files contain information in the Oracle database, including information that describes the instance where the data files and log files reside and This is where information that will be used in a restore operation is kept.*) and

"switching the program access allowance from the second database to the first database" (Maurer, Paragraph 0112, i.e. *swapping the logical unit* and Paragraph 0055, i.e. *Mirrors can be synchronized in either direction* (i.e., from the BCV to the standard or *visa versa*)).

As pointed in the prior office action (Final Office Action of 08/22/2006), when program access (control) is switched from the first database, any operation could be performed on the first database, while program access (control) is at the second database, such as reorganization of the first database or, as Maurer teaches, the storage of the first database might have been down.

The system and method of Maurer is not just a general synchronization system and method. Rather, Maurer teaches swapping logical units of a storage system wherein a first volume (first database) can be mirrored to a second volume (second database) and program/application access is switched to said second volume (second database) so that said second volume (second database) acts in place of the first volume (first database), accepting updates (Maurer, Paragraph 0060, i.e., *such as database transaction processing*; Paragraph 0112, i.e., *a data storage system includes a storage array having logical volumes or units that can be accessed by one or more clients via a switch and In the case where the first logical unit is no longer accessible, such as due to disk failure, the storage array can provide access to the copy of the first logical unit by the client by swapping the logical unit accessed by the host*). As necessary, the method and system of Maurer could switch program/application back to the first volume (Maurer, Paragraph 0112, i.e. *swapping the logical unit* and Paragraph 0055, i.e. *Mirrors can be synchronized in either direction* (i.e., from the BCV to the standard or visa versa)). The relevant feature of the Maurer patent to the instant application is the feature of switching program access between databases.

Maurer does not explicitly teach the limitations: "executing reorganization of the first database in parallel with the storing, the processing history being stored during the

execution of the reorganization", during the input/output access ", and "upon completion of the updating of the first database according to the processing history stored (based on the processing history) during the reorganization" .

On the other hand, Marshall teaches the limitations: "executing reorganization of the first database (in parallel with the storing), the processing history being stored during the execution of the reorganization", " and "upon completion of the updating of the first database according to the processing history stored" (Marshall, Paragraph 0038, i.e., *According to the present disclosure, all updates to the database that occur during reorganization of database can be captured and stored into data spaces for later replay to the new database* and Paragraph 0011, i.e., *online reorganization of an existing database that occurs while read and update activity of the existing database continues may include unloading the existing database, reloading the existing database to a shadow database, building shadow database indexes, capturing updates for the existing database, taking the existing database offline, finalizing the shadow database with the any remaining updates when the existing database is taken offline, and placing the finalized shadow database online*) .

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the method of Maurer for switching program access back and forth between database volumes with the method of Marshall for storing updates while databases are being reorganized for updating the reorganized database after the process of reorganization is finished so that the combined method would switch program access from a first database to a second database while the first database is being recognized, save updates which occur during the reorganizing of the

first data for updating the first database when the reorganization process is finished, and execute reorganization of the first database in parallel with the storing. One would have been motivated to do so in order to *reduce this outage or downtime* (Marshall, Paragraph 0011).

Maurer in view of Marshall does not explicitly teach the limitation: “(allowing a predetermined input/output access to the first database) in parallel and concurrently”.

On the other hand, Yanai teaches the limitation:

“(allowing a predetermined input/output access to the first database) in parallel and concurrently” (Yanai, Figure 14 and Figure 17; Column 6 Line 59-61, i.e., *migrating a volume concurrent with host access to the volume* and *Abstract* of Yanai specification). Yanai teaches a method and system for remote data mirroring, wherein, in an active mode migration mode, host processing of a primary volume (the program processing to the first or second database) is concurrent with migration to a secondary volume (the predetermined processing to the first database (Column 6 Line 59-61, and “Abstract” of Yanai et al. specification).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the method of Maurer for switching program access back and forth between database volumes with the method of Marshall for storing updates while databases are being reorganized for updating the reorganized database after the process of reorganization is finished and with the method of Yanai, which teaches allowing program access to a database while a restore/mirror/update is being performed on a different database, based on the restore log/history on the database

which currently allows program access, so that the combined method would switch program access from a first database to a second database while the first database is being recognized, save updates which occur during the reorganizing of the first data for updating the first database when the reorganization process is finished, and execute reorganization of the first database in parallel with the storing. One would have been motivated to do so in order provide a *data processing system, which automatically and asynchronously, with respect to a first host system, generates and maintains a back-up or "mirrored" copy of a primary storage device....* (Yanai, Column 2 Line 19-27).

Claim 2 is essentially the same as claim 1 except that it set forth the claimed invention as a data processing device rather than a data processing method and rejected for the same reasons as applied hereinabove.

Claim 22 is essentially the same as claim 1 except that it set forth the claimed invention as a computer-readable medium storing a data processing program comprising codes rather than a data processing method and rejected for the same reasons as applied hereinabove.

8. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maurer in view of Marshall, further in view of Yanai and further in view of Janssen (U.S. Patent Application Publication Number 2003/0163510).

As per claim 23, Maurer in view of Marshall and further in view of Yanai as applied to claim 1 teaches the limitations: "executing said access to the first database in parallel with the storing" (Maurer in view of Yanai), and "wherein the replica operation mode is a mode in which program access allowance has been switched from the first database to the second database" (Maurer, Paragraph 0112, i.e. *swapping the logical unit* and Paragraph 0055, i.e. *Mirrors can be synchronized in either direction* (i.e., from the BCV to the standard or visa versa)).

However, Maurer in view of Marshall and further in view of Yanai as applied to claim 1 does not explicitly teach the limitations: "determining whether the access to the first database in a replica operation mode is allowed for the program seeking the access", "if it is determined that input/output access to the first database in a replica operation is not allowed for said program, causing an error and disabling access to the first database", "wherein said step of determining whether the access to the first database in a replica operation mode is allowed includes a step of reading an access allowance flag from a table using the name of the program seeking the access as a key", and "wherein the access allowance flag indicates whether the access to the first database is allowed for the program seeking the access".

On the other hand, Janssen teaches the limitations:

"determining whether the input/output access to the first database in a replica operation mode is allowed for the program seeking the access" (Janssen, Paragraph 0008, i.e., *a database of tasks and a user-specific list of allowed tasks, comprising allowed application programs, configuring the list of allowed tasks on the basis of the*

user database and the database of tasks, detecting a command to execute a task, and preventing execution of tasks that not on the list of allowed tasks), "if it is determined that access to the first database in a replica operation is not allowed for said program, causing an error and disabling access to the first database" (Janssen, Figure 3, i.e., Compare to List, always terminate, terminate task), "wherein said step of determining whether the access to the first database in a replica operation mode is allowed includes a step of reading an access allowance flag from a table using the name of the program seeking the access as a key" (Janssen, Paragraph 0008, i.e., a database of tasks and a user-specific list of allowed tasks, comprising allowed application programs) and "wherein the access allowance flag indicates whether the access to the first database is allowed for the program seeking the access" (Janssen, Paragraph 0008, i.e., a database of tasks and a user-specific list of allowed tasks, comprising allowed application programs, configuring the list of allowed tasks on the basis of the user database and the database of tasks, detecting a command to execute a task, and preventing execution of tasks that not on the list of allowed tasks).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art modify the method of Maurer in view of Marshall and further in view of Yanai to add the feature of using a list of allowed programs to access databases, as taught by Janssen, to the method of Maurer in view of Marshall and further in view of Yanai as applied to claim 1 so that the resultant method would comprising determining input/output access to the first database by programming

seeking input/output access to said first database. One would have been motivated to do so simply to establish security of databases (which is well known in the art).

Claim 24 is essentially the same as claim 23 except that it set forth the claimed invention as a data processing device rather than a data processing method and rejected for the same reasons as applied hereinabove.

Claim 25 is essentially the same as claim 23 except that it set forth the claimed invention as a computer-readable medium storing a data processing program comprising codes rather than a data processing method and rejected for the same reasons as applied hereinabove.

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Myint whose telephone number is (571) 272-5629. The examiner can normally be reached on 8:30 AM - 5:30 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-5629. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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